

ABSTRACT

A radiation delivery source and method for making radioactive a delivery source are disclosed. The radiation delivery source has a radioactive region thereon. Radioactivity gradients, located near a proximal end and a distal end of the radioactive region, transition the radioactivity level from a first, therapeutic level to a second, non-therapeutic level. The therapeutic radioactivity level is localized between the radioactivity gradients. The radiation delivery source may be one of many forms, such as stents or source wires. Similarly, a drug delivery source and method for making a drug delivery region on the drug delivery source are disclosed. A therapeutic concentration of a drug is localized near the central portion of the drug delivery source, such as a drug-eluting balloon catheter or a drug-coated stent. Drug concentration gradients near the proximal and distal ends of the drug delivery region decrease from the therapeutic concentration to a non-therapeutic concentration. The radioactive and drug delivery regions effectively treat intravascular lesions while inhibiting or minimizing cell proliferation near the radioactive and drug delivery ends, a reaction commonly known as the “candy wrapper” effect.